

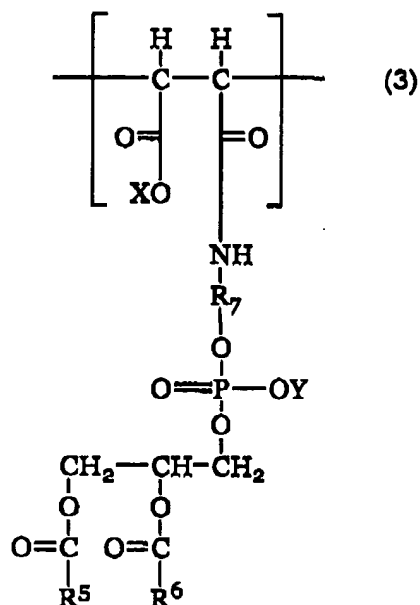
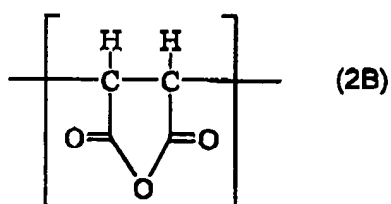
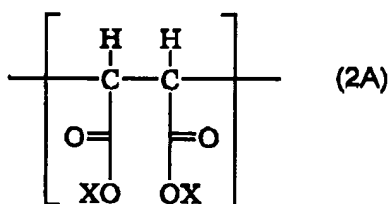
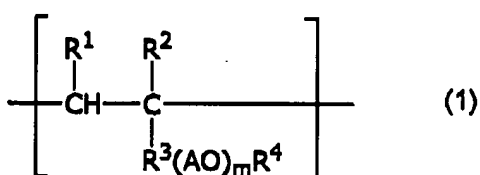
What is claimed is:

1. A phospholipid derivative, which is a phospholipid and is a copolymer containing, as essential component units,

(A) a component unit A represented by the following formula (1),

(B) a component unit B represented by the following formula (2A) and/or the following formula (2B), and

(C) a component unit C represented by the following formula (3):



wherein, in the formula (1),  $\text{R}^1$  and  $\text{R}^2$  independently represent hydrogen atom or methyl group, provided that  $\text{R}^1$  and  $\text{R}^2$  do not simultaneously represent methyl group;  $\text{R}^3$  represents a divalent hydrocarbon group having 1 to 3 carbon atoms;  $\text{AO}$  independently represents an oxyalkylene group having 2 to 4 carbon atoms;  $m$  represents an average molar number of the added oxyalkylene groups and is a number in the range represented as  $4 \leq m \leq 100$ ; and  $\text{R}^4$  represents hydrogen atom, a hydrocarbon group having 1 to 20 carbon atoms or an acyl group having 1 to 20 carbon atoms; in the formula (2A),  $\text{X}$  independently represents hydrogen atom, an alkali metal

atom, ammonium or an organic ammonium; and in the formula (3),  $R^5CO$  and  $R^6CO$  independently represent an acyl group having 8 to 24 carbon atoms;  $R^7$  represents a divalent hydrocarbon group having 2 to 4 carbon atoms; X represents hydrogen atom, an alkali metal atom, ammonium or an organic ammonium; and Y represents hydrogen atom, an alkali metal atom, ammonium or an organic ammonium, wherein a molar ratio of the component unit A relative to a total of the component unit B and the component unit C is from 7/8 to 3/7, and the component unit C is contained at a ratio of from 1 to 5 moles per 1 mole of the copolymer.

2. The phospholipid derivative according to claim 1, wherein the total number of the component unit(s) A, the component unit(s) B, and the component unit(s) C contained in the copolymer is 8 or more and 150 or less.

3. The phospholipid derivative according to claim 1, wherein the total number of the component unit(s) A, the component unit(s) B, and the component unit(s) C contained in the copolymer is 5 or more and 50 or less.

4. The phospholipid derivative according to any one of claims 1 to 3, wherein  $R^1$  is hydrogen atom,  $R^2$  is hydrogen atom or methyl group, and  $R^3$  is methylene group.

5. The phospholipid derivative according to any one of claims 1 to 4, wherein  $R^7$  is ethylene group.

6. A surfactant comprising the phospholipid derivative according to any one of claims 1 to 5.

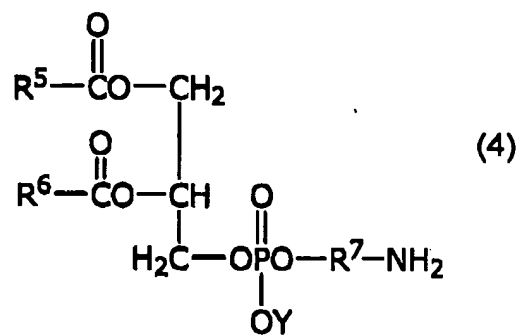
7. A lipid membrane structure comprising the phospholipid derivative according to any one of claims 1 to 5.

8. The lipid membrane structure according to claim 7, which is a liposome.

9. A pharmaceutical composition containing the lipid membrane structure according to claim 7 or 8 retaining a medicament.

10. The pharmaceutical composition according to claim 9, wherein the medicament is an antitumor agent.

11. A method for producing the phospholipid derivative according to any one of claims 1 to 5, which comprises the step of reacting a copolymer containing the component unit A and the component unit B at a molar ratio of from 7/3 to 3/7 with a compound represented by the following formula (4):



wherein  $\text{R}^5\text{CO}$ ,  $\text{R}^6\text{CO}$ ,  $\text{R}^7$ , and  $\text{Y}$  have the same meanings as defined above.